

Summary of Documented Human-Caused Mortality, Serious Injury and Non-Serious Injury in Hawaiian Monk Seals: Supporting Documentation for the 2021 Stock Assessment Report

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Introduction

The following four tables document anthropogenic mortalities and injuries in Hawaiian monk seals. Injuries are categorized and determined to be serious or non-serious according to NMFS "Guidelines for Distinguishing Serious from Non-Serious Injury of Marine Mammals Pursuant to the Marine Mammal Protection Act." Injuries are assessed both pre- and post-mitigation (e.g., through de-hooking or disentanglement) when such mitigation occurred. Serious injuries that are mitigated and become non-serious should be counted when categorizing fisheries but should not be counted for comparison with Potential Biological Removal (PBR).

Prior to 2020, the information presented below was publicly available but not aggregated as has been done here. The scope, content, and purpose of the four tables below are described here:

Table 1. Documented fishery-related mortality and injury of Hawaiian monk seals during 2018–2019.

The data in this table are the basis for calculating mortality and serious injury levels due to fisheries from 2018 to 2019 for the 2021 Stock Assessment Report (SAR). Previous SARs contain data links to the relevant information for years prior to 2018. A notes column includes both PIFSC commentary and, where noted, consultation notes from Jim Carretta at the Southwest Fisheries Science Center.

Table 2. Intentional and potentially intentional killings of Hawaiian monk seals in the main Hawaiian Islands and anthropogenic mortalities not associated with fishing gear during 2018–2019.

As was the case with Table 1, the supporting information for these mortalities prior to 2018 has been documented in previous SARs.

Table 3. Hawaiian monk seal mortalities due to toxoplasmosis during the most recent five years (2015–2019). Cause of death was determined by necropsy and associated examination.

In 2019, the Pacific Scientific Review Group recommended that in future SARs, deaths of monk seals due to toxoplasmosis should be treated as human caused. Cats are the obligate host for

the *Toxoplasma* parasite, and there are no native felids in Hawaii. Hundreds of thousands of feral and domestic cats, introduced to Hawaii by humans, are the sole cause of monk seal deaths due to this disease. The 2020 SAR was the first to include this category of anthropogenic mortality, and cases during the last five years (2015–2019) are presented here.

Table 4. Documented entanglements of Hawaiian monk seals in derelict fishing gear and other marine debris from 2015–2019.

Prior to 2020, Hawaiian monk seal SARs only reported a running tally of the number of documented cases of entanglement in marine debris and the number of documented deaths. Beginning in 2020, the estimated annual rate of mortality and serious injury from entanglement during the most recent five years is calculated and presented in the SAR, just as with other sources of anthropogenic mortality and injury. Because this information was not presented in this way prior to 2020, table 4 contains details for all cases documented during 2015–2019.

Data Citations

Johanos TC. 2020a. Hawaiian Monk Seal Research Program Hawaiian monk seal survival factors collected in the Hawaiian Archipelago. NOAA National Centers for Environmental Information.

<https://www.fisheries.noaa.gov/inport/item/5679>

Mercer TA. 2020. Hawaiian Monk Seal Research Program Hawaiian monk seal fisheries interaction data collected in the main Hawaiian Islands, 1976–2019. US National Oceanographic Data Center.

<https://www.fisheries.noaa.gov/inport/item/5687>

Kashinsky L. 2020. Hawaiian Monk Seal Research Program Hawaiian monk seal necropsy data, 1964–2019. NOAA National Centers for Environmental Information.

<https://www.fisheries.noaa.gov/inport/item/5673>

Johanos TC. 2020c. Hawaiian Monk Seal Research Program Hawaiian monk seal master identification records (annual) collected in the Hawaiian Archipelago, 1962–2019. NOAA National Centers for Environmental Information.

<https://www.fisheries.noaa.gov/inport/item/12939>

Table 1. Documented fishery-related mortality and injury of Hawaiian monk seals during 2018–2019. Determination notes column includes both PIFSC commentary and, where noted, consultation notes from Jim Carretta at Southwest Fisheries Science Center. It should be noted that PIFSC uses all available information including gear details, interaction outcomes, and seal re-sight history and health status to make the injury determinations. In some cases, these determinations diverge from the NMFS national guidelines. Cases where this occurs are noted with an asterisk (*) in the Injury Determination fields with explanation in the Determination Notes field. It should also be noted that two cases from 2018 were re-evaluated based on updated information and determined to be non-serious injuries. These are also noted with an asterisk (*) in the Injury Determination columns.

Date-1st Observed	Seal ID	Age class	Injury Type	Gear Type	Body location	Initial injury determination	Initial injury categories	Mitigation	Injury determination post-mitigation	Post-mitigation injury categories	Details	Outcome	Determination Notes	Island
3/14/2018	RH48	Juvenile	Entanglement	Net	N/A	Non-serious	P7b	Released by laynet fisher	N/A	N/A	Report of a seal entangled in net offshore and released by fisherman tending his net. Fisherman reported seal as lethargic when in net but swam away once released. Seal resighted many times post interaction	Freed from gear by net fisher; routinely sighted	Seal swam away on its own after released from net. Seal resighted multiple times afterwards and still being resighted around Oahu as of Jan. 2020-non-serious-P7b.	Oahu
2/8/2018	RJ58	Juvenile	Hook	Hook & lure	Lip	Serious	P6	Gear removed	Non-serious	P5c	Treble hook with squid skirt lure + popper lure in lower lip. Initially, several feet of attached line was wrapped/tangled around a golf ball sized piece of coral; excess line gone next day. Upon capture on 2/11, hook snagged on towel and pulled out. Minor swelling noted on lip at hook site.	Gear removed (2/11/2018)	Initial determination serious since hook had a tangle of trailing line attached that could pose entanglement or snagging hazard-serious-P6. Gear completely removed without injury P5c. Multiple resights of seal post intervention and seal resighted as of Jan. 2020.	Oahu
3/27/2018	RJ58	Juvenile	Hook	Hook & hardware	Body (belly)	Non-serious	P5c	Gear removed	Non-serious	P5c	Large circle hook with wire leader and swivel, pigtail and tangle of lightweight line with a second medium-sized rusted treble hook with wire leader attached to eye of circle hook. Both hooks embedded in belly through skin. Hooks removed same day by NMFS.	Gear removed (3/27/2018)	Hooks removed from body-non-serious-P5c (Agree with non-serious injury and P5C. The injury status is more important than the code used, P5D could be justified as well.-Carretta).	Oahu
5/5/2018	RH32	Juvenile	Hook	Hook & line	Lip and mouth or ingested	Serious	P2	Trim line	*Non-serious	P2	Small hook with feather lure (damashi gear) in right corner of mouth with swivel visible in left corner and ~24 ft of trailing line; unsure if line extended down throat initially. 21+ ft of line removed on 5/6. Captured and visually assessed on 5/9 and line was visible extending down throat. Hook and swivel in lip no longer visible externally. Seal released.	Gear no longer visible by 5/10/2018; seal routinely resighted	Excess trailing line poses entanglement/snagging hazard and line extending into oral cavity indicates hook is inside mouth or ingested-serious. Excess line trimmed. Based on gear type (damashi gear) and size of 2 nd hook, ingested hook likely very small and likely not to pose major threat. Seal was examined again in Sept. for separate external hooking, and radiographs confirmed 2–3 small hooks in stomach that were determined to be non-life threatening at the time and were left in place. Seal continues to be resighted into 2021 without obvious health concerns post mitigation-non-serious. *This case was classified as serious post-mitigation in the 2020 SAR but has been reclassified as non-serious as of 2021.	Oahu

Date-1st Observed	Seal ID	Age class	Injury Type	Gear Type	Body location	Initial injury determination	Initial injury categories	Mitigation	Injury determination post-mitigation	Post-mitigation injury categories	Details	Outcome	Determination Notes	Island
7/28/2018	RK42	Weaned pup	Hook	Hook & line	Lip	Non-serious	P5c	Gear removed	Non-serious	P5c	Large J-hook with ~5 feet trailing line (100 lb test) in right side of lower lip; volunteer initially trimmed 2 ft of line while seal was sleeping and without disturbance. Hook removed by NMFS same day.	Gear removed (7/28/2018)	Attached line not considered serious threat and hook/line removed-non-serious-P5c. (Non-serious injury. Category flexible but would lean towards P5C since the hook in lip is the primary concern, more so than the trailing line.-Carretta).	Kauai
8/22/2018	RH32	Sub-adult	Hook	Hook & line	Mouth	*Non-serious	P2, P5a	None	N/A	N/A	Lightweight fishing line observed coming from mouth-no hook observed externally; line was no longer visible by 8/23. Seal was not handled for examination in this case. Seal is known to take catch/bait off active hook and line fishing. Seal routinely sighted and alive with no health concerns as of Jan. 2020.	Gear no longer externally visible by 8/23/2018. Seal routinely sighted	Line observed coming from mouth-assume hook is inside mouth (P5a) or ingested (P2) and thus serious. However, gear is lightweight and hook presumed very small; seal was examined in Sept. when radiographs confirmed 2-3 small hooks in stomach that were determined to be non-life threatening at the time and were left in place. Seal continues to be resighted into 2020 without obvious health concerns-consider non-serious. *This case was classified as Serious in the 2020 SAR but has been reclassified as non-serious in 2021.	Oahu
9/7/2018	RH32	Sub-adult	Hook	Hook & line	Tongue	Serious	P5a	Gear removed	Non-serious	P5c	Circle hook with 2 ft of trailing line in tongue. Seal captured on beach in cage and transported to IRC for examination. Hook removed under sedation. Radiographs taken to look for additional gear given seal's history: 2-3 small hooks found inside abdomen (from previous interactions). Hooks left in place and seal released same evening.	Gear removed (9/7/2018)	Hook inside mouth (tongue)-serious-P5a; hook removed-non-serious-P5c. (Hooks in stomach are internal and believed to be from previous/separate fisheries interactions, which were assigned separate injury determination).	Oahu
6/9/2018	RB00	Adult	Hook	Hook & hardware	Cheek	Non-serious	P5c	None	N/A	N/A	Large circle hook in left cheek with leader, pigtail, and swivel attached (~1+ ft of trailing gear). Gear gone by 6/11.	Gear no longer present by 6/11/2018	Hook in lip, attached gear not determined to be entanglement hazard; hook came out on its own-non-serious-P5c (Agree with non-serious injury under P5C-Carretta).	Hawaii
10/10/2018	RK88	Weaned pup	Hook	Hook & hardware	Lip	Non-serious	P5c	Gear removed	Non-serious	N/A	Large (16/0) circle hook with monofilament leader, pigtail, and swivel in right corner of lower lip (attached gear < 1 ft). Self-reported by fisher to DLNR right after it happened. Hook removed by NMFS staff on 10/16.	Gear Removed (10/16/2018)	Attached gear determined not to be entanglement hazard; hook removed-non-serious-P5c. (Agree with non-serious injury under P5C.-Carretta)	Oahu

Date-1st Observed	Seal ID	Age class	Injury Type	Gear Type	Body location	Initial injury determination	Initial injury categories	Mitigation	Injury determination post-mitigation	Post-mitigation injury categories	Details	Outcome	Determination Notes	Island
11/5/2018	RK26	Weaned pup	Hook	Hook & line	Lip	Non-serious	P5c	None	N/A	N/A	Hooked in right corner of mouth-eye of hook with attached line (~2 ft) visible from mouth. By 11/11, seal was free of hook/gear.	Gear no longer present by 11/11/2018	Hook in lower lip and attached gear determined not to be entanglement hazard; hook came out on its own-non-serious-P5c. (Agree with non-serious injury under P5C.-Carretta).	Hawaii
12/17/2018	RO28	Adult	Hook	Hook	Lip	Non-serious	P5c	None	N/A	N/A	Small hook lodged in lower lip. No line. Hook came out on its own by 12/27.	Gear no longer present by 12/27/2018	Hook in lip, no gear attached; came out on its own-non-serious-P5c. (Agree with non-serious injury under P5C.-Carretta).	Oahu
1/16/2019	RO40	Adult	Hook	Hook & line	Mouth or ingested	*Non-serious	P2, P5a	None	N/A	N/A	Heavy blue line and thin/lightweight monofilament line coming from mouth of seal extending at least as far back as oral cavity; no hook ever observed. On 1/21, only 2" blue line observed coming from mouth. On 1/28, seal was captured, examined, and radiographed, and no line or other gear found-only small metal object behind jawbone that was left in place.	Gear no longer present upon examination 1/28/2019. Seal routinely resighted.	With line observed coming from mouth and no hook observed externally, assume the hook is in the mouth (P5A) or ingested (P2); however, seal was examined, including radiographs, and no foreign objects found. Seal routinely resighted and alive and well as of Jan. 2021. Considered non-serious.	Oahu
1/27/2019	RK40	Juvenile	Hook	Hook & hardware	Cheek	Non-serious	P5c	Gear removed	Non-serious	P5c	Medium circle hook in left cheek; slide bait rigging with monofilament leader attached; leader and hardware removed on 1/28; hook removed on 3/15.	Gear removed (3/15/2019)	Hook in cheek removed without complication-non-serious-P5c.	Oahu
3/25/2019	RKA6	Juvenile	Hook	Hook & line	Lip	Serious	P6	Gear removed	Non-serious	P5c	Large circle hook with 15 ft heavy gauge monofilament in corner of mouth; removed same day.	Gear removed (3/25/2019)	Hook in lip with excess trailing line with potential to be entanglement or snagging hazard-serious-P6. Gear safely removed from seal-non-serious-P5c.	Oahu
4/13/2019	RH48	Sub-adult	Hook	Hook & line	Lip	Non-serious	P5c	None	N/A	N/A	Small circle hook with 3-4 ft of line in left corner of mouth; attempts to trim line failed; seal seen without hook/line on 5/3.	Gear no longer present by 5/3/2019.	Hook in lip with small amount of trailing line; hook pulled out on its own without evident injury-non-serious-P5c.	Oahu
4/19/2019	RK24	Juvenile	Hook	Hook & line	Lip, foreflipper	Non-serious	P5c	None	N/A	N/A	2 small circle hooks with line attached to each; one hook in Left foreflipper and one hook in right corner of mouth; unsure of length of line.	Gear no longer present 4/24/2019.	Small hooks in body and lower lip, minimal line-came out on their own-non-serious-P5c.	Oahu

Date-1st Observed	Seal ID	Age class	Injury Type	Gear Type	Body location	Initial injury determination	Initial injury categories	Mitigation	Injury determination post-mitigation	Post-mitigation injury categories	Details	Outcome	Determination Notes	Island
4/29/2019	RH36	Sub-adult	Hook	Hook & hardware	Cheek	Serious	P6, P5c	None	N/A	N/A	Large circle hook with wire leader, hardware, and line in right corner of mouth. Hook fully pierced through cheek and tip exposed. Line long enough to impede movement. 6/15 seen free of hook/gear. Seal had not been seen since first confirmation of hooking. Line scar present right corner of mouth & lower lip where hook had pulled out.	Gear no longer present by 6/25/2019.	Hook in lip with excess line impeding movement-potential entanglement or snagging hazard-serious-P6, P5c. Hook pulled out on its own, seal observed with healed laceration where hook pulled out-P5c.	Oahu
5/28/2019	RKA0	Juvenile	Hook	Hook & hardware	Lip	Non-serious	P5c	None	N/A	N/A	Large circle hook with monofilament leader and pigtail attached; tip of hook protruding through other side of lip; hook in left lower lip; hook gone by 9/9 (observed on Lanai); healing wound left lower lip where hook pulled out.	Gear no longer present by 9/9/2019.	Hook in lip but not enough trailing gear to be entanglement/snagging hazard and hook pulled out on its own with minor injury-non-serious-P5c.	Maui
6/23/2019	RW02	Adult	Hook	Hook & hardware	Stomach	Serious	P2	Gear removed	Non-serious	P5c	Ingested Hook. Fisher self-reported hooking seal-using 18/0 circle hook with slide bait rigging. Seal first seen with gear on 7/2-lead weight and pigtail at right corner of mouth. 7/5 seal captured and taken to IRC for evaluation-radiographs show hook & hardware in stomach. 7/6 hook and hardware extracted using endoscope tools under anesthesia. Seal released 7/7.	Gear removed under anesthesia (7/6/2019)	Ingested hook-serious-P2. Gear successfully removed; seal released without complications-non-serious-P5c (Routinely resighted 2020).	Oahu
7/21/2019	RL36	Weaned Pup	Hook	Hook & line	Lip	Non-serious	P5c	None	N/A	N/A	Small rusty hook with 3" trailing line stuck in lower lip; still hooked 7/24; hook gone by 7/25.	Gear no longer present by 7/25/2019	Hook in lip, small amount of trailing line-non-serious-P5c.	Oahu
7/27/2019	R333	Adult	Hook	Hook & line	Esophagus	Serious	P2	Gear removed	Non-serious	P5c	Ingested Hook. Fisher self-reported hooking and reeling in seal and cutting line. 14/0 circle hook piercing through lower esophagus with line attached (~6 ft). Seal captured 7/28. Hook removal procedure performed on 7/31 under anesthesia. Hook removed using endoscope and long handled dehooking tools. Seal recovered well and was released the next day (8/1).	Gear removed under anesthesia (7/31/2019)	Ingested hook-serious-P2. Gear successfully removed; seal released without complications-non-serious-P5c (resighted 2020 & 2021).	Oahu
8/19/2019	RH32	Sub-adult	Hook	Hook & line	Lip	Non-serious	P5c	None	N/A	N/A	Small hook in lower lip; 3" line attached; hook gone by 8/20	Gear no longer present by 8/20/2019	Hook in lip, small amount of trailing line-non-serious-P5c.	Oahu

Date-1st Observed	Seal ID	Age class	Injury Type	Gear Type	Body location	Initial injury determination	Initial injury categories	Mitigation	Injury determination post-mitigation	Post-mitigation injury categories	Details	Outcome	Determination Notes	Island
9/15/2019	RH48	Sub-adult	Hook	Hook & line	Lip, mouth	*Non-serious	P2, P5a	Trim line	*Non-serious	P2, P5a	Very small hook with lightweight line in left lower lip; additional lightweight line also seen coming from left side of mouth on 9/19. On 9/20, lightweight line attached to hook was cut leaving 3" attached to hook; second line was not visible. On 9/25, seal seen without hook, but second heavier line (at least several feet in length) was visible coming from mouth. All gear absent externally by 10/7.	Gear no longer present by 10/7/2019	With line observed coming from mouth and no hook observed externally, assume the hook is in the mouth (P5a) or ingested (P2). However, gear is lightweight and hook small and based on seal Hx (seal routinely sighted alive and well in 2020 and early 2021) does not appear to have impacted survival. Consider non-serious.	Oahu
7/27/2019	KA190SF5	Immature	Hook	Hook & line	Lip	Non-serious	P5c	None	N/A	N/A	Fisher reported seeing small seal with hook in corner of mouth and trailing line; he spoke to a kayaker about it and the kayaker said he had seen the hooked seal around the area for a few weeks. No other information on gear or seal. No hooked seal seen on Kauai since this report.	Unknown	Limited information from public but suspect non-serious and that hook/gear came off on its own. No dead hooked seals found on island and no reports of free-swimming seal with hook/line for several months-non-serious-P5c.	Kauai
11/10/2019	R330	Adult	Hook	Hook & hardware	Chest	Non-serious	P5c	None	N/A	N/A	Large circle hook in chest (superficially) with monofilament leader and slide bait hardware and large amount of trailing line-heavy gauge monofilament. Seal was seen the following day (11/11) free of all gear.	Gear no longer present 11/11/2019	Hook in chest and came out on its own the next day-non-serious-P5c.	Oahu
11/23/2019	RH36	Sub-adult	Hook	Hook & line	Mouth or ingested	*Non-serious	P2, P5a	None	N/A	N/A	3-4 ft of lightweight monofilament line coming from mouth; no hook observed externally; seal seen without line on 11/27.	Gear no longer visible 11/27/2019	With line observed coming from mouth and no hook observed externally, assume the hook is in the mouth (P5a) or ingested (P2). However, gear is lightweight and hook small and based on seal history (seal routinely sighted alive and well in 2020 and early 2021) does not appear to have impacted survival. Consider non-serious.	Oahu
11/30/2019	RH92	Sub-adult	Hook	Hook & hardware	Stomach	Serious	P2	Gear removed	Non-serious	P5c	Large circle hook with tangle of line in stomach; monofilament leader coming from mouth. Seal first reported 11/20. Seal captured 12/1 & transported to IRC for holding; evaluated on 12/2, and hook removed under anesthesia using endoscope. Seal released on 12/3.	Gear removed under anesthesia (12/2/2019)	Ingested hook-serious- P2. Gear successfully removed; seal released without complications-non-serious-P5c.	Oahu

Date-1st Observed	Seal ID	Age class	Injury Type	Gear Type	Body location	Initial injury determination	Initial injury categories	Mitigation	Injury determination post-mitigation	Post-mitigation injury categories	Details	Outcome	Determination Notes	Island
11/29/2019	R7AA	Sub-adult	Hook	Hook & hardware	Lip	Serious	P5c	Gear removed	Non-serious	P5c	Medium circle hook with pigtail + weight + 2 ft of monofilament leader in left lower lip. First sighted 11/29 on Oahu. R7AA seen at Poipu on 12/3 with hook/line in left corner of mouth. Seal captured and hook removed 12/6. Exposed hook shank and tip were rusty. Foul odor was detected along with blood staining on the fur below the mouth, and fresh blood flowed from the wound while removing the hook.	Gear removed (12/6/2019)	Hook in lip rusty, likely been in mouth for some time; foul odor and bleeding upon hook removal indicating likely infected-serious-P5c.	Oahu
8/21/2019	RK88	Juvenile	Entanglement	Net	N/A	Mortality	P7a	None	N/A	N/A	Carcass found floating in water near shore. Necropsy findings consistent with net drowning = Peracute Underwater Entrapment. 15–17 partially digested fish in stomach; one fish was wrapped in a section of monofilament net. Recent sightings of this seal prior to death were regular and consistent with a normal healthy seal.	Mortality	Mortality due to highly suspect net drowning (P7a).	Oahu
11/9/2019	RL36	Weaned Pup	Entanglement	Net	N/A	Mortality	P7a (P9)	None	N/A	N/A	Mortality-highly suspect anthropogenic drowning (75%) or trauma (10%); more likely drowning vs. trauma.	Mortality	Mortality due to highly suspect net drowning (P7a).	Oahu

Table 2. Intentional and potentially intentional killings of Hawaiian monk seals in the main Hawaiian Islands and anthropogenic mortalities not associated with fishing gear during 2018–2019.

Date-1st Observed	Seal ID	Age class	Injury Type	Initial injury determination	Initial injury categories	Mitigation	Injury determination post-mitigation	Post-mitigation injury categories	Details	Outcome	Island
5/31/2018	RJ42	Juvenile	Anthropogenic Trauma	Mortality	P9	N/A	N/A	N/A	Mortality-severe blunt force trauma to the head; human-inflicted.	Mortality	Molokai

Table 3. Hawaiian monk seal mortalities due to toxoplasmosis during the most recent five years (2015–2019). Cause of death was determined by necropsy and associated examination. Note that there were no confirmed Toxoplasmosis deaths documented in 2019.

Date-1st Observed	Seal ID	Age class	Sex	Injury Type	Initial injury determination	Mitigation	Injury determination post-mitigation	Initial injury categories	Details	Outcome	Island
5/15/2018	RK60	Adult	Female	Toxoplasmosis	Mortality	N/A	N/A	N/A	Disseminated toxoplasmosis	Mortality	Oahu
5/16/2018	RKD2	P1	Female	Toxoplasmosis	Mortality	N/A	N/A	N/A	Disseminated toxoplasmosis	Mortality	Oahu
5/17/2018	RT10	Adult	Female	Toxoplasmosis	Mortality	N/A	N/A	N/A	Disseminated toxoplasmosis	Mortality	Oahu
11/13/2015	RN36	Sub-adult	Female	Toxoplasmosis	Mortality	N/A	N/A	N/A	Live stranding; taken to IRC on 11/9 for evaluation and treatment; died on 11/13; disseminated toxoplasmosis.	Mortality	Oahu
3/17/2015	RB24	Adult	Female	Toxoplasmosis	Mortality	N/A	N/A	N/A	Live standing; taken to IRC on 3/16 for evaluation and treatment; seal died on 3/17; disseminated toxoplasmosis.	Mortality	Oahu

Table 4. Documented entanglements of Hawaiian monk seals in derelict fishing gear and other marine debris. Because these have not been previously reported on an annual basis, the most recent five years included in the 2021 Stock Assessment Report are presented.

Date 1st Observed	Seal ID	Age Class	Injury Type	Gear/Debris Type	Body Location	Initial Injury Determination	Initial Injury Category	Mitigation	Post Mitigation Injury Determination	Post Mitigation Injury Category	Details	Outcome	Determination Notes	Island
4/9/2015	YJ12	Adult	Entanglement	Plastic ring	Mid-body	Serious	P8a	Gear removed	Non-serious	N/A	Black plastic ring (2–3" thick) tight around seal's midsection; removed on 4/16 using soldering tool to melt plastic.	Gear removed (4/16/2015)	2–3" plastic ring tight around mid-body-serious-P8a.	Southeast Island, PHR
6/3/2015	WG12	Weaned pup	Entanglement	Net	Anterior body	Non-serious	P8b	Gear removed	Non-serious	N/A	Wrapped loose net ball loop around neck/under foreflippers. Witnessed entanglement. BPC restrained head while CEM removed net. No lasting effects. Sleeping at shoreline shortly after.	Gear removed (6/3/2015)	Line loose around neck/anterior; likely not to become constricting as seal is weaned pup and expected to lose condition over the following year–non-serious-P8b.	Laysan
6/7/2015	LG22	Weaned pup	Entanglement	Plastic ring	Neck	Serious	P8a	Gear removed	Non-serious	N/A	Observed on shore sleeping with a large plastic ring around neck; seal seen the previous day without entanglement. HLR and JRC caught seal in a stretcher net and pushed the ring over the seal's neck until it was clear. There was no obvious damage to the seal's skin where ring was situated. Total handling time was 00:40 sec. Seal was alert and aware and had no obvious signs of trauma. Upon release, the seal was observed swimming in the nearshore area.	Gear removed (6/7/2015)	Plastic ring around neck with potential to become constricting over time–serious-P8a.	Lisianski
6/24/2015	WG30	Weaned pup	Entanglement	Line	Neck	Serious	P6	Gear removed	Non-serious	N/A	WG30 seen sleeping at the shoreline with 1" thick rope looped around her neck. The loop was attached to a 7 ft long, 1" diameter rope. Seal was resting on the trailing length of rope. Loop was pulled off seal under restraint. WG30 swam away after disentanglement. I watched her in the shallows for approx. 20 minutes afterwards. Respirations every 10–20 seconds for the first 1–5 minutes while swimming. Complete body mobility and head movements. Continued swimming and diving in shallow reef.	Gear removed (6/24/2015)	Gear pulled off seal so likely not constricting but trailing has line potential to cause drag or get snagged and anchor animal-serious-P6.	Laysan
6/24/2015	TN18	Juvenile	Entanglement	Net	Neck, muzzle	Serious	P8a	Gear removed	Non-serious	N/A	Seal hauled up toward camp with thin blue net ~1 m x 0.5 m wrapped twice around neck above foreflipper and wrapped once around muzzle. Seal captured using hoop net and seatbelt cutter to remove entanglement. After net was free, TN18 moved down beach to water and stayed nearby floating at surface before swimming away ~10 min later. Slight indentation from net observed around neck ; however, no open wound noted.	Gear removed (6/24/2015)	Constricting wrap of line-had to be cut to remove and left indentation-serious-P8a.	Laysan

Date 1st Observed	Seal ID	Age Class	Injury Type	Gear/ Debris Type	Body Location	Initial Injury Determination	Initial Injury Category	Mitigation	Post Mitigation Injury Determination	Post Mitigation Injury Category	Details	Outcome	Determination Notes	Island
6/28/2015	G234	Sub-adult	Entanglement	Line	Neck	Serious	P7b	Gear removed	Non-serious	N/A	Untagged seal observed sleeping next to a pile of net/lines. A loop of clear heavy monofilament line (line diameter 0.3 cm) observed around neck anchoring seal to net bundle. HLR cut line where it connected to net bundling while seal slept. Seal woke up, vocalized, rolled out from under cut line and away from net, turned around, and went back to sleep on net. Unlikely to have freed self easily. Net was large and heavy. Seal is medium+ body condition, loop would not have fit over mid-body.	Gear removed (6/28/2015)	Loop of heavy monofilament line around neck attached to large, heavy net pile anchoring seal to net pile at shoreline. Loop of line loose & not likely to become constricting but attachment to large net pile posed mobility issues-serious-P7b.	Lisianski
7/12/2015	GK40	Juvenile	Entanglement	Plastic container	Head	Non-serious	P8b	Attempted removal	N/A	N/A	Square plastic container missing sides 18x19x11 cm wide observed on seal's head. Seal awake and alert. Observed for about 1 hour to see if seal could disentangle self. Watched seal struggle multiple times but was unsuccessful at disentanglement. Attempted to intervene with a long plastic hook on a stick to pull debris off over head. Disturbed seal, who shook debris off head. No injury from entanglement. Seal went to sleep on beach afterwards.	Freed self from entanglement 7/12/2015	Seal shook debris off head when team attempted to remove with tool-non-serious since gear able to be shaken off- non-serious-P8b.	Lisianski
7/15/2015	LG18	Weaned pup	Entanglement	Line	Neck	Non-serious	P8b	Gear removed	Non-serious	N/A	Seal observed with black nylon line loop around head/neck. Line diameter ~1 cm. Observed seal's unsuccessful attempt to shake loop off. HLR pulled on trailing end of line, pulled loop over seal's head. Seal went back to sleep on beach after release.	Gear removed (7/15/2015)	Loop of line is not constricting and not likely to become constricting given seal is weaned pup-non- serious-P8b.	Lisianski
8/7/2015	TA70	Adult	Entanglement	Net	Mid-body	Serious	P8a	Gear removed	Non-serious	N/A	Entangled in green fishing net around mid-section. There were several impressions on skin where the net had slipped past her mid-section. There were at least 4 loops around her body with the rest of the net trailing down beach. Dimensions of net ring ~ 201 cm in diameter and 1 m long.	Gear removed (8/7/2015)	Net entanglement tight enough around body to leave indentation in skin; multiple loops-serious-P8a.	Lisianski
8/19/2015	LG10	Weaned pup	Entanglement	Plastic cone	Mid-body	Non-serious	P8b	Gear removed	Non-serious	N/A	Seal observed sleeping inside a large broken orange traffic cone. Unsure if seal could free self. Bottom of cone tight around seal's mid-body. Disturbed seal to shake off debris, HLR pulled on edge of cone to remove it.	Gear removed (8/19/2015)	Debris easily removed by field staff when seal was disturbed; seal may have self-extricated-non- serious-P8b.	Lisianski
9/23/2015	KT40	Adult	Entanglement	Line	Mid-body	Serious	P8a	Gear removed	Non-serious	N/A	Seal observed with 3 cm thick line tight around mid-body (indented in body). Captured in hoop net and cut line; seal went into water after handling.	Gear removed (9/23/2015)	Line tight around body, requiring it to be cut off to remove-serious-P8a.	Sand Island, Midway

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9/23/2015	PG20	Weaned pup	Entanglement	Plastic ring	Head/neck	Serious	P8a	Gear removed	Non-serious	N/A	PG20 was observed with a black plastic pipe around its neck. The seal was caught using a stretcher net and the ring was pulled off fairly easily but was relatively tight around the seal's neck. There were no obvious marks or injury to the seal from the entanglement. The pipe's dimensions were 10 cm diameter, 15 cm long, and 0.3 cm thick. This seal may have been seen on 9/21 entangled but sighting unconfirmed.	Gear removed (9/23/2015)	Plastic piping/ring tight around head/neck-indentations on pelage upon removal; appeared to be older weaned pup-serious-P8a.	Spit Island, Midway
4/24/2016	TE28	Adult	Entanglement	Net	Neck	Serious	P8a	Gear removed	Non-serious	N/A	Green polypro line/net tight around neck, digging into flesh and partially grown over. Seal in decent body condition. Seal successfully disentangled on 5/4; seal was captured, sedated, and line cut free. Active bleeding from entanglement injury around neck. Seal given dose of antibiotics prior to release.	Gear removed (5/4/2016)	Entanglement very constricting and causing injury (laceration) to seal-serious-P8a.	Lisianski
6/9/2016	PH00	Weaned pup	Entanglement	Shoe	Muzzle	Non-serious	P8b	Gear removed	Non-serious	N/A	Seal asleep on the beach with muzzle shoved all the way inside of a shoe. The shoe came off easily (without restraint) and after the initial disturbance, she rolled over and went back to sleep. She was seen on the previous day without the shoe; entanglement was less than 28 hours.	Gear removed (6/9/2016)	Debris (shoe) not tight around muzzle and was easily removed; seal likely could have shaken it off-non-serious-P8b.	Sand Island, Midway
6/29/2016	QH36	Nursing pup	Entanglement	Net	Neck	Serious	P7b	Gear removed	Non-serious	N/A	East Island turtle team reported an entangled pup ~10 m offshore just before 1400h. Upon arrival at East Island, mother was present with pup in water and vocalizing. Pup was unable to free itself from the netting in which it was entangled. Mother was kept onshore using improvised crowding boards while pup was freed from netting in water. Netting was tightly wound around pup's neck.	Gear removed (6/29/2016)	Dependent pup entangled and immobilized in netting offshore; entanglement constricting around pup's neck; potential to drown-serious-P7b.	East Island, FFS
5/22/2017	TB50	Adult	Entanglement	Line	Neck	Non-serious	P8b	None	N/A	N/A	Observed entanglement-seal moved head into round sturdy loop that was connected to some line (6-8 cm); seal then proceeded to move forward shifting the ring to portion in front of foreflippers. Seal entered water and the entanglement came loose after ~5 min.	Freed self from entanglement 5/22/2017	Loop of line loose and seal able to free self shortly after entanglement-non-serious-P8b.	Laysan
6/1/2017	Y805	Adult	Entanglement	Net		Non-serious	P8b	None	N/A	N/A	Seal hauled out next to net ball and became entangled through a loop of net. Seal self-extricated, stayed in area, and pupped overnight.	Freed self from entanglement 6/1/2017	Entanglement not constricting and seal able to free itself-non-serious-P8b.	East Island, FFS

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6/27/2017	LH20	Juvenile	Entanglement	Plastic loop + float	Mid-body	Serious	P7b	Gear removed	Non-serious	N/A	Plastic wire loop wrapped once around mid-body. Plastic wire was tightly wound to a piece of styrofoam roughly the same size as the seal, which limited movement on land and would certainly restrict movement in water. Seal in good/medium condition. Wire snug around seal, but not tight. This particular marine debris was not present on seal the day before. Wire pulled off towards hind flippers as seal moved forward. Debris moved with seal when seal moved; would not have been able to self-extricate.	Gear removed (6/27/2017)	Loop of plastic around mid-body and attached to large styrofoam float restricting mobility on land/in water; gear removed-serious-P7b.	Lisianski
6/29/2017	VJ38	Weaned pup	Entanglement	Net	Neck	Serious	P8a	Gear removed	Non-serious	N/A	Yellow net and line with about 4 cm holes; seal's head in net and tight around neck. Line frayed and draped over seal's body, dragging behind and entangling flippers which limited mobility and ability to haul out. Freed using a table as a visual barrier and cut line with bandage scissors.	Gear removed (6/29/2017)	Net tight around neck and trailing gear limiting mobility of seal on land-serious-P8a.	Kure
6/30/2017	LJ14	Weaned pup	Entanglement	Eel cone	Muzzle	Serious	P8a	Gear removed	Non-serious	N/A	Eel cone firmly around muzzle. Removed on first attempt. Minimal reaction from seal. No wound observed. Seal continued to rest on beach.	Gear removed (6/30/2017)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P8a.	Lisianski
6/30/2017	VJ22	Weaned pup	Entanglement	Net	Neck	Serious	P8a	Gear removed	Non-serious	N/A	Yellow netting/tight strands around neck and large mass of netting attached. Gear removed.	Gear removed (6/30/2017)	Lightweight netting tight around neck and mass of net attached-serious-P8a.	Kure
7/5/2017	WJ08	Weaned pup	Entanglement	Eel cone	Muzzle	Serious	P8a	Gear removed	Non-serious	N/A	Eel cone removed from muzzle of weaned pup.	Gear removed (7/5/2017)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P8a.	Laysan
7/8/2017	YO22	Adult	Entanglement	Line	Mid-body	Serious	P8a	Gear removed	Non-serious	N/A	YO22 observed entangled with a single thickness braided rope loop ~3/4" in diameter. The loop was very tight around mid- body just behind the foreflippers. YO22 was pregnant and very large; the line had likely become tighter as she gained weight. Seal captured using hoop net. Restraint only lasted seconds and the rope was 95% cut with the first snip. The second snip completed the cut and YO22 was released. There were no apparent cuts or lacerations from the line and only an indentation was observed. YO22 remained on the beach for ~5 minutes then entered the water.	Gear removed (7/8/2017)	Line constricting around pregnant female's midsection-serious-P8a.	Tern Island, FFS

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7/24/2017	GL52	Sub-adult	Entanglement	Line	Neck	Serious	P8a	Gear removed	Non-serious	N/A	Brand new entanglement (seen ~1 hr earlier without). Swimming with blue line firmly at base of neck. Successful disentanglement by KMB. Line not as low on neck/firmly pressing into flesh. Seatbelt cutter used to sever line behind head. Seal flushed and line collected. No injury observed. Line measured at 71 cm long by ~1 cm diameter.	Gear removed (7/24/2017)	Line tight around neck and potential to become tighter as seal grows-serious-P8a.	Lisianski
7/30/2017	LJ24	Weaned pup	Entanglement	Plastic ring	Neck	Non-serious	P8b	Gear removed	Non-serious	N/A	Sleeping on sandy beach with flat, plastic loop sung around neck. Plastic loop did not appear to inhibit breathing. Manually restrained to remove loop which was brittle enough to be broken off. Plastic loop measured 68 cm in circumference, 21 cm in diameter, and 2.5 cm in width. Seal uninjured from entanglement.	Gear removed (7/30/2017)	Plastic ring around neck of weaned pup; reported as brittle and broke off while removing so seal likely would have lost gear on its own/or not become constricting-non serious-P8b.	Lisianski
8/21/2017	QH24	Juvenile	Entanglement	Net	Neck	Serious	P8a	Gear removed	Non-serious	N/A	Seal was observed with a line around neck. Line appeared to be tight and there was pressure on neck. The line did not appear to be cutting the skin. Seal flushed on approach for a closer look. Next day seal was observed in turtle pit with fishing net around neck. Seal was handled and net was cut with trauma shears. No visible lacerations. 2017/09/21-seal observed for one of the first times since intervention. A faint indentation visible on neck where line was removed.	Gear removed (8/22/2017)	Entanglement constricting neck-indentation left around neck after release-serious-P8a.	Little Gin, FFS
5/22/2018	GT60	Adult	Entanglement	Line	Head	Non-serious	P8b	None	N/A	N/A	Moved down beach and got head caught in loop of line. Observed ~20 min and able to free self. Line collected.	Freed self from entanglement (5/22/2018)	Loop of line loose and seal able to free self the same day-non-serious-P8b.	Lisianski
5/23/2018	TF55	Sub-adult	Entanglement	Line	Neck	non-serious	P8b	Gear removed	Non-serious	N/A	Seal observed with ~4 loops of orange nylon line 1/2" diameter around neck, not tight. Line attached to 1x1 ft net ball. Seal asleep, medium+ body condition. HLR hooked a curved stick around line and pulled, then grabbed line and pulled it up and off seal's head. Seal was dragging debris around (loops too small to fit over seal's mid-body); unknown if seal could have freed self.	Gear removed (5/24/2018)	Line not tight around neck and was able to be pulled off by field staff; not likely to pose constricting hazard-non-serious-P8b.	Laysan
6/3/2018	TN94	Adult	Entanglement	Line + buoy	Mid-body	Non-serious	P8b	Gear removed	Non-serious	N/A	2 loops of line around mid-body and attached to 2 large buoys. Left foreflipper appeared pinned to body. Buoy pulled; line came off over posterior of seal. Unsure if able to free self. Released uninjured.	Gear removed (6/3/2018)	Lines loose; attachment to buoys likely to hinder mobility but seal hauled out with entanglement; gear removed easily by pulling it off-non-serious-P8b.	Laysan

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6/7/2018	LK08	Weaned pup	Entanglement	Line	Neck	Serious	P8a	Gear removed	Non-serious	N/A	Line attached to larger cluster of tangled thick rope around weaned pup's neck. Cut loose with small knife. Pup did not wake up.	Gear removed (6/7/2018)	No further information on entanglement and no photos. Consider initial entanglement as serious based on wrap around neck and attached gear, line had to be cut to remove-non-serious-P8a.	Lisianski
6/26/2018	LK24	Weaned pup	Entanglement	Net	Mid-body	Non-serious	P8b	None	N/A	N/A	Caught in ball of line/net with line around midsection. Freed self before intervention necessary. Line too large to collect; cut to prevent future issues.	Freed self from entanglement 6/26/2018	Seal able to free self from line around body without injury-non-serious-P8b.	Lisianski
7/10/2018	RK24	Weaned pup	Entanglement	Fishing line	Mouth	Serious	P6	Freed by public	Non-serious	N/A	Line and lead weight reported coming from mouth (by bystander/public) with excess line tangled in rocks anchoring seal in place; line cut by bystanders to free seal. Upon NOAA response, line no longer visible; seal captured and examined (including radiographs)-no gear/foreign bodies observed. No photos of entanglement and no gear collected. Not active fishing. Seal still alive, 2020.	Anchored line cut by public; seal was free of all gear upon examination 7/10/2018	Considered serious under P6 as the seal was reported anchored in place until freed by bystanders.	Oahu
7/21/2018	G38A	Adult	Entanglement	Line	Neck	Non-serious	P8b	None	N/A	N/A	Observed with loose line around neck. Seal observed rolling and trying to bite attached ball of line. BAD intervened and seal reacted strongly, pushing line below foreflippers and eventually pulled line off body while flushing.	Freed self from entanglement 7/21/2018	Line loose around neck; seal freed self from line upon attempt to capture seal-non-serious-P8b.	Lisianski
7/23/2018	VK12	Weaned pup	Entanglement	Net	Neck	Mortality	N/A	None	N/A	N/A	Carcass of VK12 found washed ashore near the sector 3/4 border. Externally, carcass condition = code 3. Carcass bloated, ~50% of skin sloughed off, mostly on dorsum. Head decapitated but attached to body by skin a few inches in width; spinal column severed. Last resight alive was on 7/18 (5 days prior). Netting tightly wound around skin attaching head trailing approximately three feet to broken coral head pieces dragged in by carcass. Evident that netting was caught on reef at some point before or after death, most likely prior to entanglement due to degree of netting tangled around reef. Ultimately, death as a result of entanglement.	Mortality	Mortality due to entanglement.	Kure
7/30/2018	TE24	Adult	Entanglement	Rubber ring	Neck	Non-serious	P8b	Gear removed	Non-serious	N/A	Seal hauled up to front of tent and put head inside a bucket lid rubber O-ring. Appeared unable to free self. Field personnel removed O-ring with seatbelt cutters duct taped to a pole. Seal released uninjured.	Gear removed (7/30/2018)	Rubber ring not constricting or likely to become constricting-non-serious-P8b.	Laysan

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8/2/2018	TK18	Adult	Entanglement	Line	Neck	Non-serious	P8b	Gear removed	Non-serious	N/A	TK18 observed sleeping next to tent with marine debris line loop around her neck. HLR used seatbelt cutters duct taped to a tent pole to cut the line off seal's neck. Seal rolled and looked around but did not vocalize and went back to sleep in same spot. Released uninjured.	Gear removed (8/2/2018)	Line not constricting or likely to become constricting-non-serious-P8b.	Laysan
8/6/2018	KN02	Adult	Entanglement	Plastic ring	Head/neck	Serious	P8a	Gear removed	Non-serious	N/A	Entanglement of plastic ring around the base of animal's head. Self-extraction not possible. The ring was flat in shape and no more than 1 cm thick. Animal exhibited normal breathing and behavior; entanglement not imminently lethal. One unsuccessful disentanglement attempt using seatbelt cutters but successfully removed with that tool later that evening. No injury as a result of the entanglement.	Gear removed (8/6/2018)	Plastic ring around head/neck; unlikely to come off on its own and potential to become more constricting over time-serious-P8a.	Kure
8/7/2018	RK24	Weaned pup	entanglement	Fishing line	Neck	Serious	P7b	Gear removed	Non-serious	N/A	Loop of monofilament line tightly wrapped around neck (constricting/indentation) with ~2 ft of line trailing from loop; removed by NMFS staff 8/7. No apparent injury to seal upon release.	Gear removed (8/7/2018)	Constricting monofilament line around neck with potential to injure if left in place-serious-P7b.	Oahu
8/9/2018	WK42	Weaned pup	Entanglement	Net	Neck	Non-serious	P8b	Gear removed	Non-serious	N/A	WK42 sleeping under loop of netting attached to large net. Netting pulled to see if loop would come off seal's head; seal stayed on debris upon release, then was intentionally hazed off debris.	Gear removed (8/9/2018)	Netting lying over seal's neck-not looped; not constriction hazard and easily pulled off-non-serious-P8b.	Laysan
8/17/2018	DG32	Sub-adult	Entanglement	Line	Muzzle	Non-serious	P8b	Gear removed	Non-serious	N/A	Seal had muzzle through frayed loop in large hawser line. 50/50 chance it could have freed self or become more entangled. MER removed line from seal and removed loop from muzzle. Removed line because line could have gotten around seal's neck and made situation more severe.	Gear removed (8/17/2018)	Line loose around muzzle; line very frayed and was easily pulled off; not likely to have been constriction hazard-non-serious-P8b.	Southeast Island, PHR

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9/2/2018	WK34	Weaned pup	Entanglement	Net	Muzzle	Serious	P8a	Gear removed	Non-serious	N/A	Thin netting observed around muzzle and hanging down near left foreflipper. Seal very alert, went into water. Net did not seem to affect flippers as the seal was fully mobile; however, it did not seem likely seal would be able to open his mouth due to the netting. 09/02 1500: observed again with netting around head and muzzle. One loop was tight around head behind eyes, and there appeared to be one loop around the top half of muzzle pinning his vibrissae to his face and another loop around the bottom half of his muzzle. The loops of netting were pulling his lips slightly apart but did not appear cutting into skin. 9/3 1120: captured and assessed. Netting was visible on roof of mouth but not around tongue or extending into throat; cut netting off head and muzzle and pulled netting out of mouth. At end of handling, pup opened mouth wide and no netting was visible. Flushed into water upon release. No obvious injuries due to entanglement.	Gear removed (9/3/2018)	Netting around head & muzzle and wrapped inside of mouth-serious-P8a.	Laysan
10/28/2018	KN02	Adult	Entanglement	Line	Mid-body	Serious	P8a	Gear removed	Non-serious	N/A	10/28 1123: seal sighted in the water with an entanglement around its mid-body. The seal could swim and was observed playing with other seals. Photos show the line wrapped snugly at the mid-body with a small amount of indentation in the seal's body from the rope. 10/28 1922: able to successfully remove the rope from KN02-used loppers to cut the 1" rope loop. The indentation on the seal's abdomen remained apparent after the disentanglement but no wounds were observed.	Gear removed (10/28/2018)	Line snug around mid-body and left indentation around abdomen once removed-serious-P8b.	Kure
2/9/2019	VK02	Juvenile	entanglement	Net	Neck	Serious	P7b	Gear removed	Non-serious	N/A	Seal observed entangled with a net around its neck, resting on the beach. Seal captured in stretcher; net and entanglement cut from around the neck; seal fled into water upon release. 2/10: small lacerations from entanglement on ventral part of neck observed.	Gear removed (2/9/2019)	Netting tightly wrapped around neck/constricting; net was removed and visible injury (lacerations) to neck observed-serious-P7b.	Kure
3/17/2019	RK80	Juvenile	Entanglement	Plastic ring	Muzzle	Serious	P8a	Gear removed	Non-serious	N/A	Marine debris entanglement. Plastic ring (3.75 cm wide) removed from seal's muzzle.	Gear removed (3/17/2019)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P8a.	Oahu
6/17/2019	LL10	Weaned pup	Entanglement	Eel cone	Muzzle	Serious	P7b	Gear removed	Non-serious	N/A	Eel cone around muzzle. Pulled off eel cone but discovered blue plastic ring under cone and needed additional support to remove it. Seal was breathing fine and vocalizing. Seal swam away after eel cone was removed. Blue plastic ring separate case.	Gear removed (6/17/2019)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P7b-gear removed.	Lisianski

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6/17/2019	LL10	Weaned pup	Entanglement	Plastic ring	Muzzle	Serious	P7b	Gear removed	Non-serious	N/A	Blue plastic ring discovered around muzzle after eel cone removed. Attempt at getting the blue ring off was unsuccessful without help. 6/17 PM: blue plastic ring removed from muzzle. Required light restraint, bandage scissors used as leverage to get under the ring for removal.	Gear removed (6/17/2019)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P7b-gear removed.	Lisianski
6/17/2019	LL16	Weaned pup	Entanglement	Eel cone	Muzzle	Serious	P7b	Gear removed	Non-serious	N/A	Removed eel cone from muzzle while seal slept. Seal continued to sleep after removal.	Gear removed (6/17/2019)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P7b-gear removed.	Lisianski
6/18/2019	LL10	Weaned pup	Entanglement	Eel cone	Muzzle	Serious	P7b	Gear removed	Non-serious	N/A	Eel cone around muzzle, pulled off while seal slept. Separate entanglement from 6/17.	Gear removed 96/18/20190	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P7b-gear removed.	Lisianski
6/20/2019	LL12	Weaned pup	Entanglement	Line	Body	Non-serious	P7b	Gear Removed	Non-serious	N/A	Seal was in a large loop of line connected to onshore net ball. Seal was encouraged out while the line was lifted to help get his flipper free.	Gear removed 96/20/20190	Line loose around seal and seal herded out of potential entanglement-non-serious-P7b.	Lisianski
6/25/2019	VL06	Weaned pup	Entanglement	Net	Neck, body	Non-serious	P7b	None	Non-serious	N/A	Weaned pup was observed thrashing its flippers in the water and vocalizing. Its head was just able to poke above the surface of the water to breathe. Bunched up net seen wrapped around the seal's neck. Seal continued to thrash in the water intermittently. After 10 to 15 minutes, the net appeared to spread out and wrap around the seal from its neck to its lower abdomen. The seal thrashed and freed itself a few minutes later. It swam away quickly and normally. It was observed playing in a shallow rock pool nearby. The seal's breathing through the entanglement was heavy and audible from shore.	Freed self from entanglement 6/25/2019	Seal freed self from entanglement and was sighted multiple times throughout the rest of the year without injury-non-serious-P7b.	Kure
6/26/2019	LL34	Weaned pup	Entanglement	Plastic ring	Muzzle	Serious	P7b	Gear removed	Non-serious	N/A	Seal with plastic ring around muzzle-maybe from an old bottle. Took plastic off while seal slept.	Gear removed (6/26/2019)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P7b-gear removed.	Lisianski
7/14/2019	LL10	Weaned pup	Entanglement	Plastic ring	Muzzle	Non-serious	P7b	None	N/A	N/A	Short (1") section of 4" diameter HDPE pipe on snout. Returned 30 minutes later to find seal had extricated itself.	Freed self from entanglement 7/14/2019	Muzzle entanglements generally considered serious but seal freed self quickly and was resighted multiple times afterwards and without injury-P7b.	Lisianski

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7/17/2019	RL20	Weaned Pup	Entanglement	Fishing line	Muzzle	Non-serious	P8b	Gear removed	Non-serious	N/A	Piece of derelict monofilament line tightly wrapped around muzzle with small stick hanging off the left side of the mouth in a tangle. Line was compressing/indenting skin. Seal captured and disentangled same day. After line fragment was removed there was no apparent mark or injury from the line. Old, thin line-broke apart in hand during removal = NOT active fishing.	Gear removed (7/17/2019)	While line was constricting around muzzle, it was old, brittle line that was likely to break (broke apart during removal) and not considered potential hazard-non-serious-P8b.	Oahu
7/19/2019	WL52	Weaned pup	Entanglement	Line	Mid-body	Non-serious	P7b	None	N/A	N/A	Seal observed playing in water with thick line wrapped around chest. Fully mobile, no trailing gear; portion of line on left side appeared thin. Seal observed several hours later hauled out without line/gear.	Freed self from entanglement 7/19/2019	Seal freed self from gear within hours without injury-non-serious-P7a.	Laysan
7/21/2019	LL42	Weaned pup	Entanglement	Line	Mid-body	Serious	P7b	Gear removed	Non-serious	N/A	Seal seen with line tightly wrapped around torso and left foreflipper. Seal's head was underwater. Cut line with scissors. Seal woke and barked but did not leave site and remained resting next to giant net ball.	Gear removed (7/21/2019)	Seal entangled, line tightly wrapped and attached to large net conglomerate; seal's head underwater before being freed-serious-P7b.	Lisianski
7/22/2019	LL42	Weaned pup	Entanglement	Plastic tube	Muzzle	Serious	P7b	Gear removed	Non-serious	N/A	Seal was found on beach with muzzle stuck in a section of tube. The tube was a piece of a filter. It was pulled off the seal's muzzle while the seal was resting.	Gear removed (7/22/2019)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P7b-gear removed.	Lisianski
8/12/2019	LL16	Weaned pup	Entanglement	Line	Neck	Serious	P6, P7b	Gear removed	Non-serious	N/A	1/4" line around neck, tight but not choking. Attached line tangle interfering with RFF movement. Gear removed without injury.	Gear removed (8/12/2019)	Line tight around neck with trailing line impeding movement and potential to become snagged or cause drag-serious-P6, P7b.	Lisianski
8/28/2019	WK52	Juvenile	Entanglement	Eel cone	Muzzle	Serious	P7b	Gear removed	Non-serious	N/A	FWS observed seal with hagfish cone ("eel cone") on muzzle. FWS personnel removed the cone successfully from the seal. The seal remained on the beach for ~10 minutes then entered the water. FWS observed the seal as uninjured and behaving normally.	Gear removed (8/28/2019)	Consider muzzle entanglements serious; constricting and prevent/hinder seal's ability to feed-serious-P7b-gear removed.	Laysan
11/22/2019	KU190E01	Adult	Entanglement	Line	Mid-body	Non-serious	P7b	None	Non-serious	N/A	Unidentified adult seal observed with what appeared to be loop of 1" rope around the midsection; entangled seal not resighted. When checked again, the seal was gone. In the spot where it had been resting was a loop of 1" rope.	Freed self from entanglement 11/22/2019	Line loose around seal's mid-body and seal freed self on same day-non-serious-P7b.	Kure